Languages of the Mind: Essays on Mental Representation. By Ray Jackendoff. MIT Press, Cambridge, MA. (1992). 200 pages. $12.50.

Contents:

Introduction. 1. Languages of the mind. 2. What is a concept, that a person may grasp it? 3. Word meanings and what it takes to learn them: Reflections on the Piaget-Chomsky debate. 4. Is there a faculty of social cognition? 5. Unconscious information in language and psychodynamics. 6. Spatial language and spatial cognition. 7. Musical parsing and musical affect. 8. The problem of reality. Notes. References. Index.

An Introduction to Genetic Algorithms. By Melanie Mitchell. MIT Press, Cambridge, MA. (1996). 205 pages. $30.00.

Contents:

Preface. Acknowledgments. 1. Genetic algorithms: An overview. 2. Genetic algorithms in problem solving. 3. Genetic algorithms in scientific models. 4. Theoretical foundations of genetic algorithms. 5. Implementing a genetic algorithm. 6. Conclusions and future directions. Appendix A. Selected general references. Appendix B. Other resources. Bibliography. Index.

The Computer Music Tutorial. By Curtis Roads with John Strawn, Curtis Abbott, John Gordon, and Philip Greenspun. MIT Press, Cambridge, MA. (1996). 1234 pages. $50.00.

Contents:

Foreword: New music and science. Preface. Acknowledgments. I. Fundamental concepts. Overview to Part I. 1. Digital audio concepts. 2. Music systems programming. II. Sound synthesis. Overview to Part II. 3. Introduction to digital sound synthesis. 4. Sampling and additive synthesis. 5. Multiple wavetable, wave terrain, granular, and subtractive synthesis. 6. Modulation synthesis. 7. Physical modeling and formant synthesis. 8. Waveform segment, graphic, and stochastic synthesis. III. Mixing and signal processing. Overview to Part III. 9. Sound mixing. 10. Basic concepts of signal processing. 11. Sound spatialization and reverberation. IV. Sound analysis. Overview to Part IV. 12. Pitch and rhythm recognition. 13. Spectrum analysis. V. The musician's interface. Overview to Part V. 14. Musical input devices. 15. Performance software. 16. Music editors. 17. Music languages. 18. Algorithmic composition systems. 19. Representations and strategies for algorithmic composition. VI. Internals and interconnections. Overview to Part VI. 20. Internals of digital signal processors. 21. MIDI. 22. System interconnections. VII. Psychoacoustics. Overview to Part VII. 23. Psychoacoustics in computer music. Appendix. Fourier analysis. References. Name index. Subject index.

Linear Algebra Labs with MATLAB® (Second edition). By David R. Hill and David E. Zitarelli. Prentice Hall, Upper Saddle River, NJ. (1996). $22.33.

Contents:

New features in the second edition. Topical organization. Instructional routines: Overview. Labs. Lab 1. Matrices in MATLAB. Lab 2. Linear systems. Lab 3. Matric operations. Lab 4. Homogeneous systems, echelon forms, and inverses. Lab 5. A vector space example. Lab 6. Linear combinations. Lab 7. Coordinates and change of basis. Lab 8. The determinant function. Lab 9. Inner product spaces. Lab 10. Orthogonal sets. Lab 11. Plane linear transformations. Lab 12. Linear transformations. Lab 13. The Eigenproblem. Applications. 1. Introduction to graph theory. 2. Secret codes. 3. Least squares models. Appendices. 1. Instructional extensions to MATLAB. 2. Index of MATLAB commands. 3. Index of terms.

Krakatau: The Destruction and Reassembly of an Island Ecosystem. By Ian Thornton. Harvard University Press, Cambridge, MA. (1996). 346 pages. $39.95.

Contents:

Acknowledgments. 1. On touch of nature. 2. The day that shook the world. 3. The great enigmas of 1883. 4. Why Krakatau? 5. Life returns. 6. The "Krakatau Problem." 7. Arrival. 8. Krakatau's child. 9. Community enrichment. 10. Divergence of the forests. 11. Life on an active volcano. 12. Krakatau and island biogeography. 13. Community assembly: Lottery or jigsaw puzzle? 14. The human presence, past and future. Glossary. Biographyical notes. References. Credits. Author index. General index.

Computer-Aided Analysis of Difference Schemes for Partial Differential Equations. By Victor G. Ganzah and E. V. Vorozhtsov. John Wiley & Sons, New York. (1996). 458 pages. $65.00.

Contents:

Preface. 1. The necessary basics from the stability theory of difference schemes and polynomials. 2. Symbolic-numerical method for the stability investigation of difference schemes on a computer. 3. Application of optimization methods to the stability analysis of difference schemes. 4. Stability analysis of difference schemes by catastrophe theory methods. 5. Construction of multiply connected stability regions of difference schemes by computer algebra and pattern recognition. 6. Maximally stable difference schemes. 7. Stability analysis of nonlinear difference schemes. 8. Symbolic computation of differential approximations. Appendices. A. Gas-Dynamic matrices. B. REDUCE program for scheme 4.6.19). Index.